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17.05.95 Bulletin 95/20(71) Applicant: **International Business Machines
Corporation
Old Orchard Road
Armonk, N.Y. 10504 (US)**(72) Inventor: **Gotro, Jeffrey Thomas
1300 Foxboro Lane
Endwell,
New York 13760 (US)
Inventor: Hedrick, Jeffrey Curtis
75 Villa Drive
Peekskill,**

**New York 10566 (US)
Inventor: Papathomas, Konstantinos
75 Coventry Road
Endicott,
New York 13760 (US)
Inventor: Patel, Niranjan Mohanlal
16A Carnaby Street
Wappings Falls,
New York 12590 (US)
Inventor: Viehbeck, Alfred
31 Maurerbrook Drive
Fishkill,
New York 12524 (US)
Inventor: Joseph, William
2120 Garfield Avenue
South,
Apt. 101 (US)**

(74) Representative: **Teufel, Fritz, Dipl.-Phys.
IBM Deutschland Informationssysteme
GmbH,
Patentwesen und Urheberrecht
D-70548 Stuttgart (DE)**(54) **Homo-, co- or multicomponent thermoplastic polymer dispersed in a thermoset resin.**

(57) This invention provides the design and synthetic procedure for a thermoplastic copolymer which can be co-reacted with XU8212 (or any DGEBA or novolac epoxy resin) to enhance fracture toughness, processability, and drillability without sacrificing other desirable properties such as high temperature performance, thermal stability, etc. A requirement for the thermoplastic copolymers is that they be initially soluble in the XU 8212 resin and then undergo an in-situ phase separation process as the network cure progresses. Furthermore, the thermoplastic modifier must be soluble in methyl ethyl ketone (MEK) for conventional processing techniques to be utilized to fabricate the Clark boards. This approach to a thermoplastic modifier would permit use of the existing resin and panel fabrication process but enhance the

material mechanical properties for improved processability and product reliability.

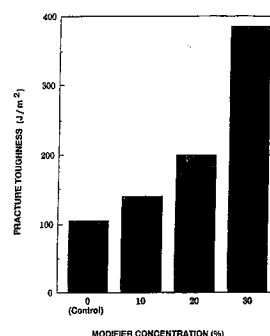


FIGURE 1

EP 0 640 653 A3



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EUROPEAN SEARCH REPORT

Application Number
EP 94 11 2028

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	EP-A-0 498 766 (CIBA-GEIGY) * claims 1-4; examples 1-3 * ---	2,7,9-19	C08L63/00 C08L81/06 C08L71/00
X	EP-A-0 479 192 (CIBA-GEIGY) * claims 1,4,12 * ---	2,7,9-19	C08L101/00 C08G59/30
X	EP-A-0 383 725 (CIBA-GEIGY) * claim 1 * ---	2,7,9-19	
X	EP-A-0 388 358 (CIBA-GEIGY) * claims 1,17 * ---	2,7,9-19	
X	EP-A-0 292 203 (THE STANDARD OIL COMPANY) * claims 1,4,9 * ---	2	
X	EP-A-0 249 048 (AUSIMONT) * claim 1 * ---	2	
P,X	EP-A-0 581 314 (IBM) *WHOLE DOCUMENT * -----	1-30	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			C08L C08G
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 16 September 1994	Examiner O'SULLIVAN, T
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document	



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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions.

namely:

see sheet -B-

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid.
- namely claims:
- ☒ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims.

namely claims 2, 4, 5, 7, 9, 10-30



LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims 2,4,5,7,9,10-30 :

Mixture of epoxy resin with F-containing thermoplastics. Prepregs, laminates, circuitboards therefrom.

2. Claims 1,4,5,7,9,10-30 :

Mixture of F-containing epoxy resin with F-containing thermoplastics. Prepregs, laminates, circuitboards therefrom.

3. Claims 3,4,5,8-30 :

Mixture of Br containing epoxy resin with Br containing thermoplastics. Prepregs, laminates, circuitboards therefrom.